

URS Greiner Woodward Clyde

A Division of URS Corporation

February 18, 2000

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143058

Ms. Terese VanDonsel
United States Environmental Protection Agency
Office of Superfund, Region 5
SR-6J
77 West Jackson
Chicago, IL 60604-3590

Submitted Via Federal Express

Subject: Transmittal of 90% Remedial Design
Document Dividers
Detrex Source Area - Ashtabula, Ohio

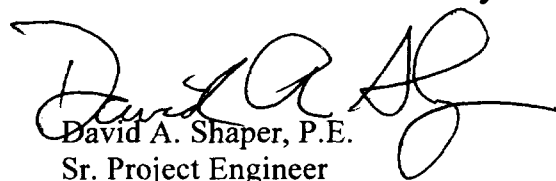
Dear Ms. VanDonsel:

On February 17, 2000, URS Greiner Woodward Clyde (URSGWC) transmitted six (6) copies of the 90% Remedial Design for the Detrex Source Area. In cleaning up the copying and binding area, we found the enclosed dividers and attachments, which probably belong in one of the copies in your possession. Please check the copies and insert these attachments, as appropriate.

I apologize for any inconvenience that this may have caused.

Sincerely,

URS Greiner Woodward Clyde


David A. Shaper, P.E.
Sr. Project Engineer

ATTACHMENTS

Construction Quality Assurance Plan Objectives Detrex Source Control Remedial Action

The objective of the Construction Quality Assurance Plan (CQAP) for the Detrex Remedial Action (RA) is to develop systematic procedures to verify and document that design and regulatory requirements are properly implemented during the RA. The CQAP describes the quality assurance (QA) objectives and protocol necessary to ensure that the final product meets the design specifications. Construction QA is the responsibility of Detrex and its designated contractors and will take place throughout the construction process.

This document, submitted at the 90% design level, describes the objectives of the CQAP. The actual CQAP will be included as part of the final design submittal.

Elements of the CQAP

As recommended in the USEPA *Remedial Design/Remedial Action Handbook* (June 1995), the Detrex CQAP will contain the following elements:

- Lines of authority and responsibilities of all key personnel involved in the RA. This organization will be illustrated schematically in a flowchart.
- Construction QA personnel qualification requirements.
- A list of inspection activities, including the summary, scope, and frequency of the tests and observations used to monitor the RA and verify compliance with environmental requirements and customary construction practices, OSHA, building and safety codes, etc.
- A list of sampling requirements, including field tests and laboratory analyses.
- All documentation requirements for reporting CQA activities, including daily summary reports and inspection data sheets.

General Construction Quality Assurance Objectives

The RA activities shall be coordinated with or completed prior to sediment removal activities in the DS Tributary, which will be performed as part of the remediation of the Sediment Operable Unit (SOU) of the Fields Brook Superfund Site. General CQA objectives for the Detrex RA include the following:

Construction Quality Assurance Plan Objectives

Detrex Source Control Remedial Action

Page 2

- The Contractor will conduct all work pursuant to Contractor's site-specific Health and Safety Plan in a manner that minimizes risk to RA workers, Detrex employees and the general public;
- All work will be conducted in a manner that minimizes adverse environmental impact during and after completion of RA activities; and,
- All RA-related wastes, including soils, sediments and recovered groundwater, will be treated, handled and/or disposed appropriately.

Specific Construction Quality Assurance Objectives

Each of the RA components has specific CQA objectives, which are summarized below. The inspection and testing protocols will be described in the *Construction Quality Assurance Plan*, which will be included in the final design submittal. The following components are major tasks of the RA.

Slurry Wall Construction

CQA objectives for the slurry wall include the following:

- Survey control to ensure that the slurry wall is installed at the proper plan location and to the specified depths;
- Mix control to verify that the trench slurry meets the specifications of Section 02168 with respect to additive content, minimum hydration time, density, sand content, pH and viscosity. CQA measures will include review of the data sheets that accompany the clay mineral additive (bentonite) shipments, monitoring of hydration time, slurry density and pH measurement and Marsh funnel viscosity.
- Classification and confirmation sampling of soils to assure that the backfill mix contains low permeability silts and clays free of deleterious materials, topsoil, and compounds of concern. Soils for the backfill mix will be obtained from select portions of the groundwater collection trench and slurry wall excavations and off-site sources, if necessary. Soils and sediments from the vicinity of the DS Tributary will not be used in the backfill mix.
- Mix control to verify that the soil-bentonite backfill meets the specifications of Section 02168. Quality control tests will include slump, density and moisture content.

Construction Quality Assurance Plan Objectives
Detrex Source Control Remedial Action
Page 3

- Field and/or laboratory testing to demonstrate that the in-place soil-bentonite backfill material has a permeability of 10^{-7} cm/sec or less. (A reliable field test has not been identified; test cylinders or Shelby tubes of representative backfill samples may be collected and analyzed in a laboratory, but real-time data are preferable. Collection of Shelby tube samples from the actual wall is not proposed.)
- Placement control during installation, including verification that:
 - ◆ Sloughing and caving of the trench walls are minimized;
 - ◆ The wall has been keyed a minimum penetration depth of 2 feet into the till layer beneath the lacustrine sediments;
 - ◆ Panels are installed vertically and fully join adjacent panels without horizontal offset;
 - ◆ Excessive sediments are not present at the base of the trench that could allow for preferential groundwater migration beneath the wall;
 - ◆ Voids, sloughed material or slurry pockets are not present within the trench backfill; and,
 - ◆ The clay cap and surface restoration provide adequate protection for the slurry wall backfill.

Groundwater Collection Trenches/DS Tributary Interceptor Trench

CQA measures for the groundwater collection trenches, which consist of the DS Tributary interceptor trench and the collection trench upgradient of the slurry wall, include the following:

- Product review to ensure that all collection pipes, fittings, backfill, geosynthetics and other construction materials meet the requirements of the project specifications;
- Survey control to verify that the trenches meet the alignment, depth and slope requirements of the Contract Drawings;
- Visual inspection, direct measurement and density testing to verify that piping and geosynthetics are properly installed, and bedding and backfill materials are appropriately compacted to minimize settlement and surface water infiltration; and,
- With respect to the DS Tributary interceptor trench, minimization of the amount of surface water infiltration, which ultimately would be routed to the Detrex treatment

Construction Quality Assurance Plan Objectives
Detrex Source Control Remedial Action
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system, by installation of very low density polyethylene (VLDPE) membrane material and adequate compaction of clay backfill material.

Catalyst Pile Removal

The catalyst pile area is located in the southern portion of Detrex property north of Exposure Unit No. 8 (EU-8) of the SOU. This work will be completed prior to or at the same time as SOU remedial activities in the area. CQA measures for removal of the catalyst pile area include the following:

- The primary CQA objective associated with the catalyst pile area is ensuring that the material is completely removed. This objective will be accomplished through clearing of the area, visual inspection, and confirmation sampling of surficial soils for PCBs (Method 8080), once the catalyst materials are removed.
- The final grade of this area is not critical. Following removal of the catalyst, the area will be graded to a slope that minimizes the potential for erosion, then covered with topsoil and re-vegetated.

Site Clearing, Filling and Re-Grading

CQA measures for site clearing, filling and re-grading include the following:

- Survey control to verify that clearing, filling and re-grading are performed according to the Contract Drawings, achieve the final grade contours and tolerances established in the Section 2200 specifications, and are appropriately restored.
- Verification that fill materials, where necessary, meet appropriate standards for use.
- Monitoring of fill operations in areas where geosynthetic materials are placed (the northern drainage ditch, the former pond areas) to ensure that the geosynthetics are not subsequently damaged.

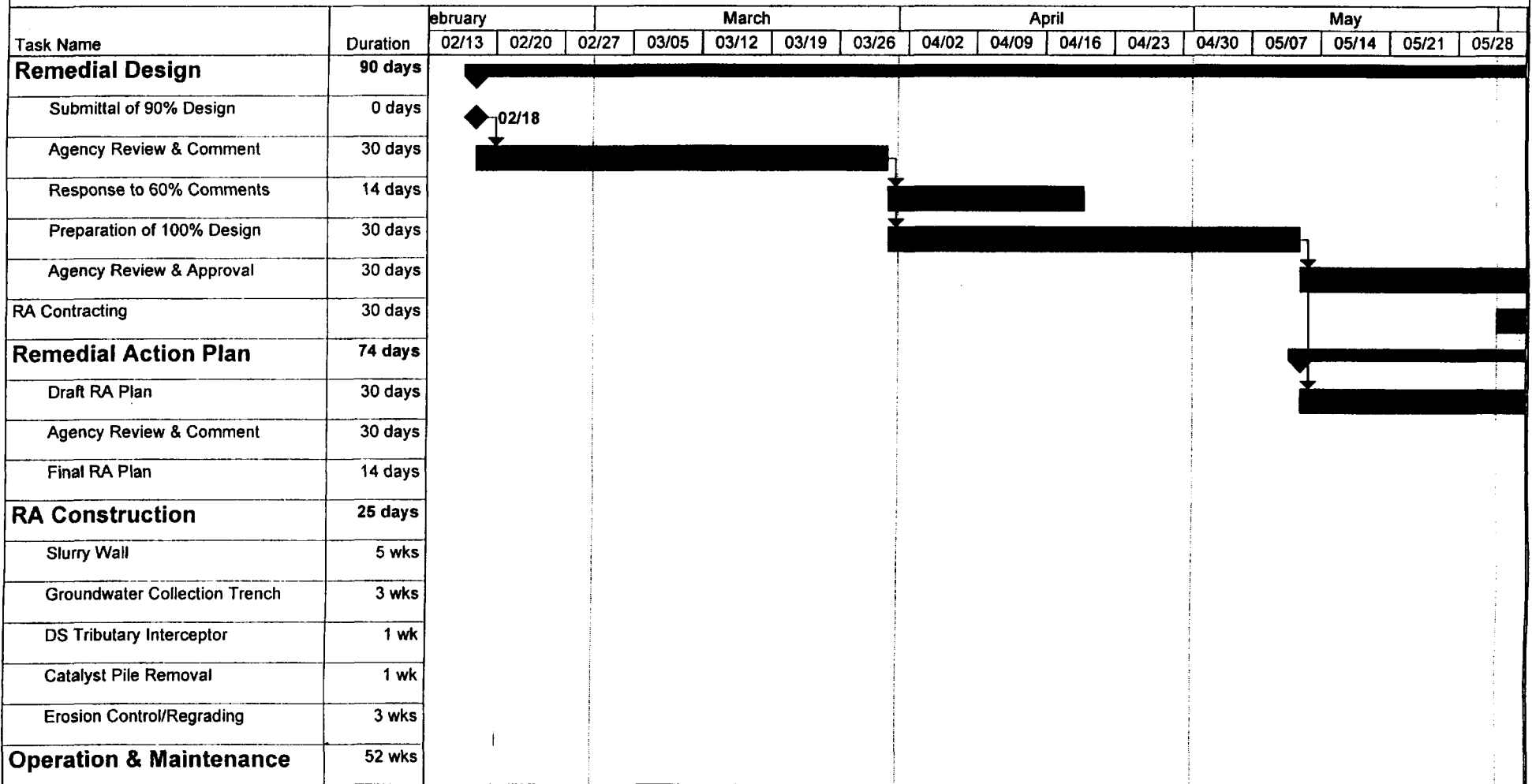
ATTACHMENT 1
CQAP Objectives

ATTACHMENT 2
Project Schedules

Figure 1

Remedial Design/Remedial Action Construction Schedule

Detrex Corporation - Ashtabula, Ohio

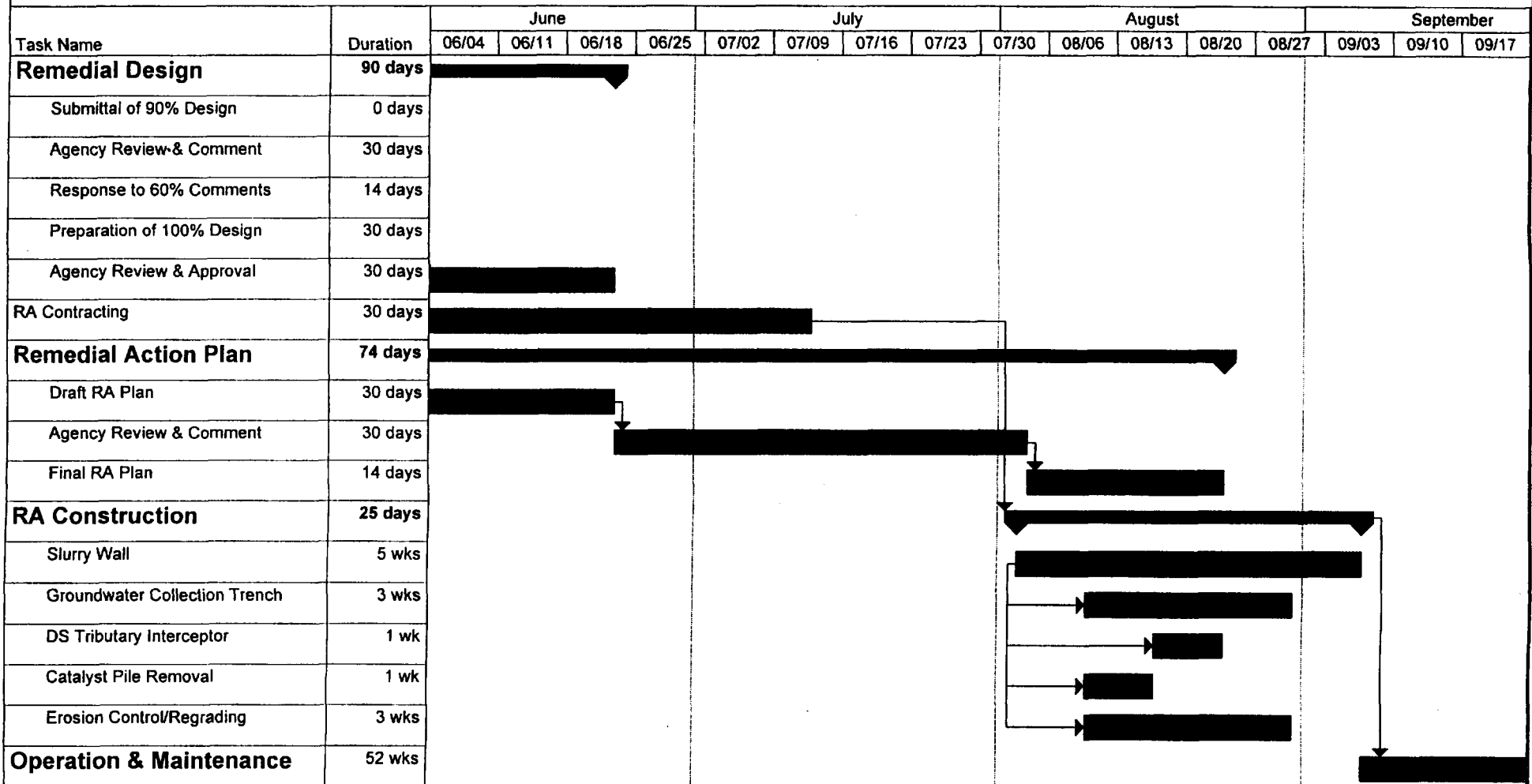


Project: SCHED1 Date: Thu 02/10/00	Task		Summary		Rolled Up Progress	
	Split		Rolled Up Task		External Tasks	
	Progress		Rolled Up Split		Project Summary	
	Milestone		Rolled Up Milestone			

Figure 1

Remedial Design/Remedial Action Construction Schedule

Detrex Corporation - Ashtabula, Ohio














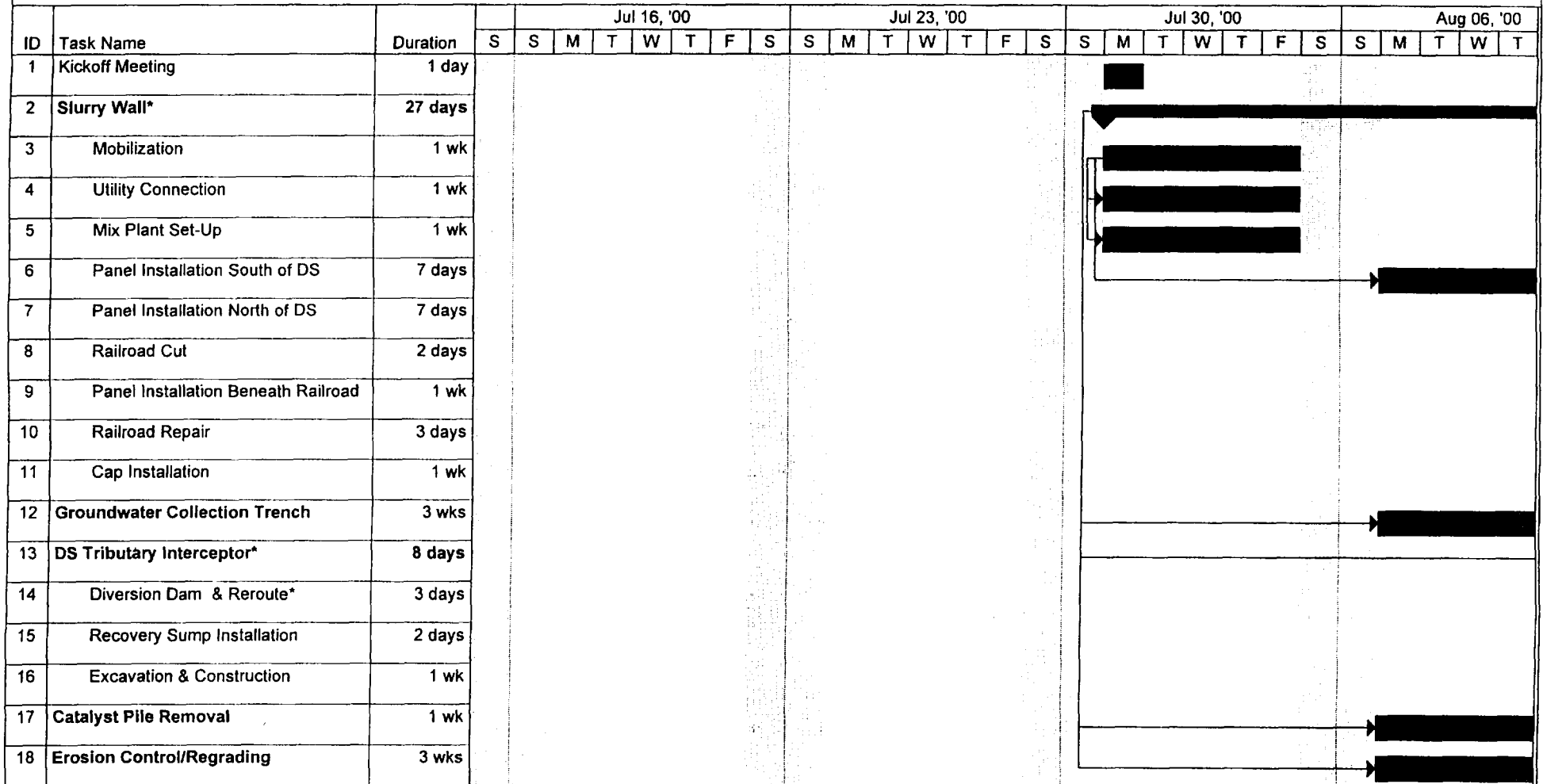
Project: SCHED1 Date: Thu 02/10/00	Task		Summary		Rolled Up Progress	
	Split		Rolled Up Task		External Tasks	
	Progress		Rolled Up Split		Project Summary	
	Milestone		Rolled Up Milestone			

Figure 2

Remedial Action Construction Schedule Detrex Corporation - Ashtabula, Ohio



"*" - Denotes a task critical to the Sediment Operable Unit (SOU) remedial action schedule.

Task

Split

Progress

Milestone

Summary

Rolled Up Task

Rolled Up Split

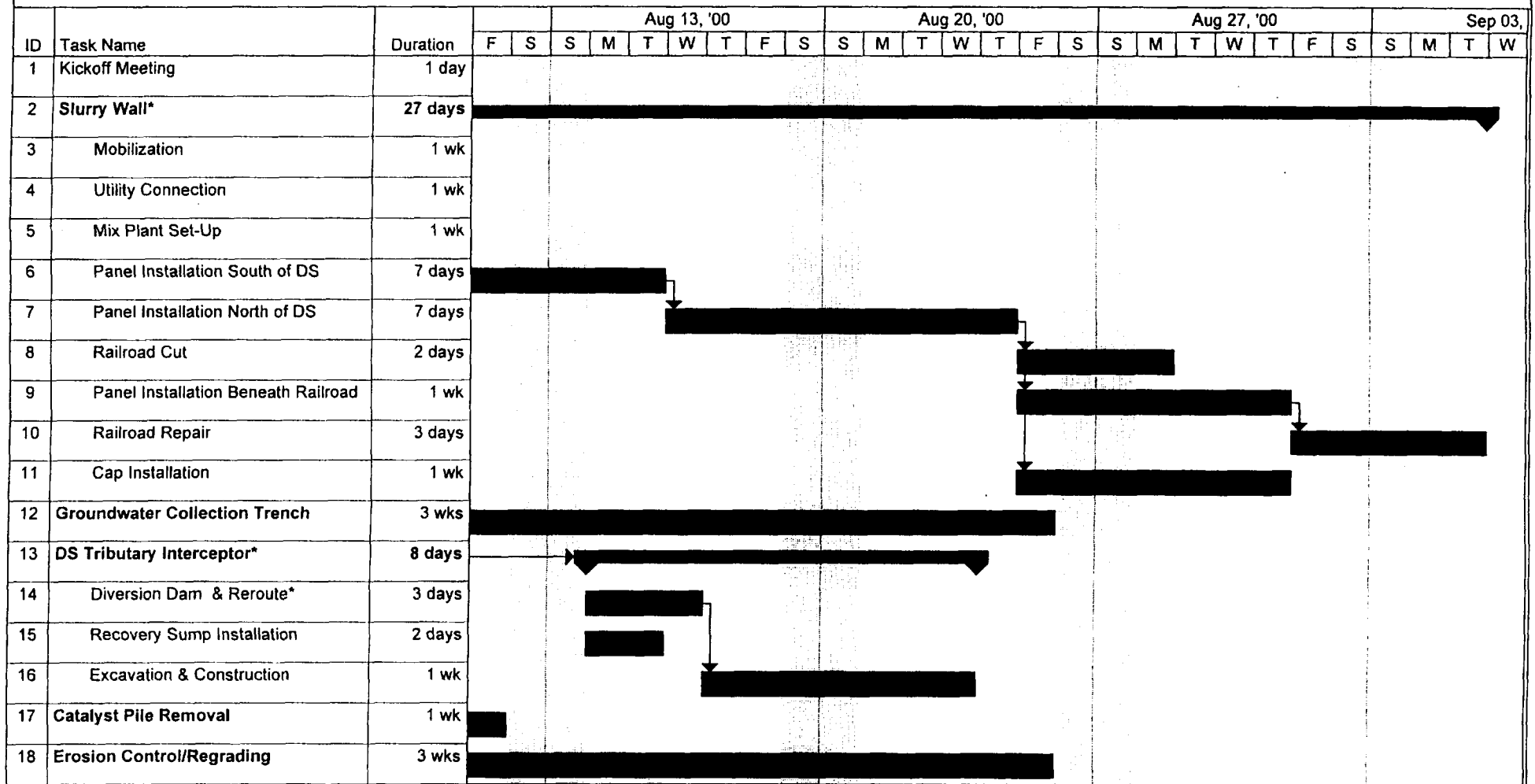
Rolled Up Milestone

Rolled Up Progress

External Tasks

Project Summary

Figure 2
Remedial Action Construction Schedule
Detrex Corporation - Ashtabula, Ohio



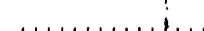
*** - Denotes a task critical to the Sediment Operable Unit (SOU) remedial action schedule.

Task

Split

Progress

Milestone



Summary

Rolled Up Task

Rolled Up Split

Rolled Up Milestone



Rolled Up Progress

External Tasks

Project Summary



ATTACHMENT 3
Estimated Costs

TABLE 1 SUMMARY OF ESTIMATED COSTS
DETRIX CORPORATION - ASHTABULA, OHIO
FIELDS BROOK SUPERFUND SITE SOURCE CONTROL MEASURES

GENERAL RESPONSE: CONTAINMENT, PREPARED BY: URS GREINER WOODWARD CLYDE
COLLECTION, & TREATMENT

CONSTRUCTION ITEMS		QUANTITY	UNITS	UNIT PRICE	RAW COST	LEVEL OF SAFETY	COST FACTOR	TOTAL COST	
1) Equipment Mobilization/Demobilization	1	lumpsum		\$50,000	\$50,000	D	1	\$50,000	
2) Slurry Wall (~600'x22'x2.5')	1	lumpsum		\$495,000	\$495,000	D	1	\$495,000	
3) Wall Performance Monitoring Wells	16	each		\$2,500	\$40,000	D	1	\$40,000	
4) Soil Disposal from Slurry Wall (On-Site Regrading)	60,000	tons		\$4	\$240,000	D	1	\$240,000	
5) Groundwater Dewatering Trench (~700'x10'x2')	700	lin. ft.		\$150	\$105,000	D	1	\$105,000	
6) DS Tributary French Drain (~400'x8'x2.5')	400	lin. ft.		\$125	\$50,000	C	1.3	\$65,000	
7) Catalyst Pile (Off-Site Solid Waste Landfill/SOU Landfill)	500	cu yd		\$50	\$25,000	D	1	\$25,000	
8) DS Tributary & Pond Sediment Disposal (SOU Landfill)	1,000	cu yd		\$50	\$50,000	C	1.3	\$65,000	
9) Surface Water Drainage Control	64,000	sq. ft.		\$0.20	\$12,800	D	1	\$12,800	
10) Backfill with Soil Cover/Liner Material	64,000	sq. ft.		\$1	\$64,000	D	1	\$64,000	
11) Fencing	2500	lin. ft.		\$15	\$37,500	C	1	\$37,500	
CONSTRUCTION ITEMS COST (INCLUDING DISPOSAL)								\$1,199,300	
ADDITIONAL CONSTRUCTION AND CONTINGENCY COSTS				PERCENTAGE OF CONSTRUCTION COST				COST	
CONSTRUCTION ITEMS COST (INCLUDING PROTECTION):				CONSTRUCTION TOTAL				\$1,199,300	
ADDITIONAL CONSTRUCTION COST:									
HEALTH AND SAFETY CONTINGENCY								5	\$60,000
CONSTRUCTION CONTINGENCY								10	\$119,900
CONSTRUCTION OVERSIGHT								10	\$119,900
									\$1,499,100
SUPPORT COSTS:				SUPPORT COST TOTAL					
ENGINEERING AND DESIGN								10	\$119,900
PERMITTING AND LEGAL								5	\$60,000
SERVICES DURING CONSTRUCTION								5	\$60,000
									\$239,900
TOTAL TECHNOLOGY CAPITAL COST								\$1,739,000	
OPERATION AND MAINTENANCE (O&M) ITEMS		QUANTITY	UNITS	UNIT PRICE	RAW COST	LEVEL OF SAFETY	COST FACTOR	YEARLY COST	
1) Slurry wall and Regraded Area Inspections	2	per year		\$400	\$800	D	1	\$800	
2) Weekly Inspections, including Sampling, etc.	52	per year		\$200	\$10,400	D	1	\$10,400	
3) Laboratory Analysis costs (VOCs, SVOCs)	12	samples		\$525	\$6,300	D	1	\$6,300	
4) Groundwater Monitoring (8 Wells; VOCs, SVOCs, Duplicate & Blank)	20	samples		\$600	\$12,000	D	1	\$12,000	
5) Reporting	1	lumpsum		\$25,000	\$25,000	D	1	\$25,000	
TOTAL TECHNOLOGY O&M YEARLY COST								\$54,500	
REMEDIAL ALTERNATIVE SUBTOTAL (YEAR 1) -								\$1,793,500	
TOTAL TECHNOLOGY O&M PRESENT WORTH									
(5 & 5 YEARS)								\$236,000	
REMEDIAL ALTERNATIVE SUBTOTAL (YEAR 5) -								\$1,975,000	
TOTAL TECHNOLOGY O&M PRESENT WORTH									
(5 & 10 YEARS)								\$420,800	
REMEDIAL ALTERNATIVE SUBTOTAL (YEAR 10)-								\$2,159,800	
TOTAL TECHNOLOGY O&M PRESENT WORTH									
(5 & 30 YEARS)								\$837,800	
REMEDIAL ALTERNATIVE SUBTOTAL (YEAR 30) -								\$2,576,800	

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ATTACHMENT 4
Geotechnical Data

Attachment 4-A

Additive Compatibility Test Summaries

ADDITIVE COMPATABILITY TEST SUMMARIES

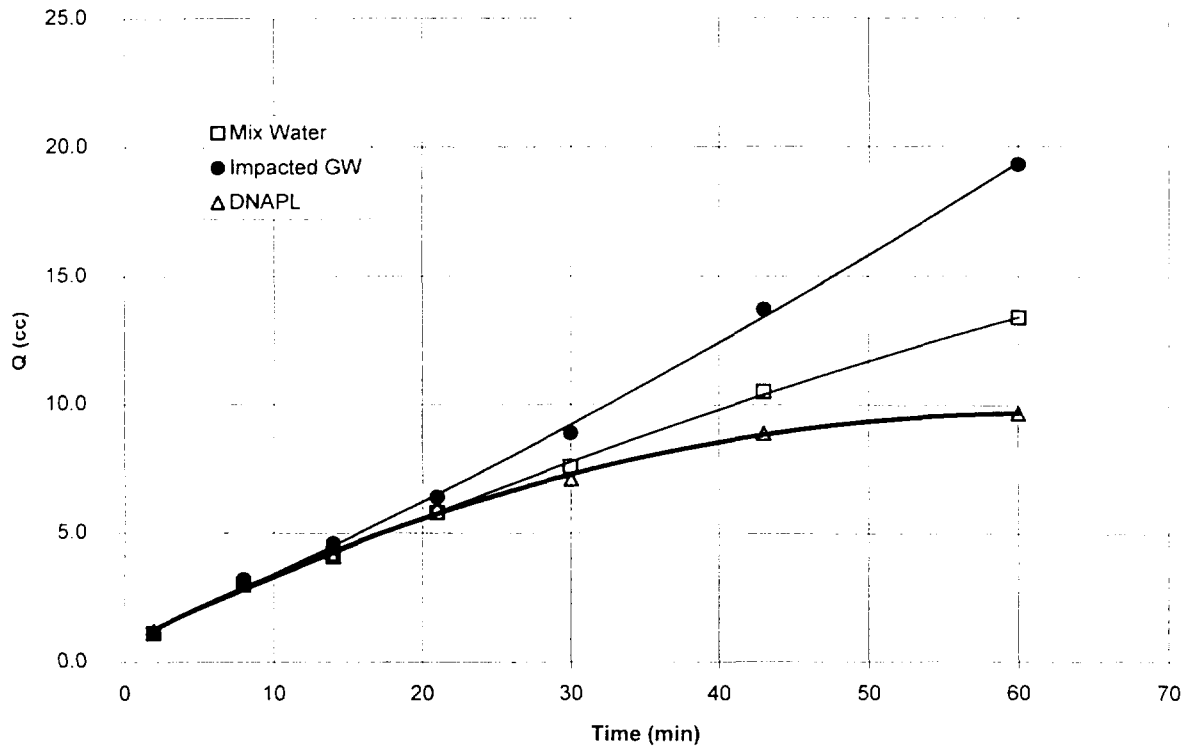
ADDITIVE PLASTICITY INDEX COMPATABILITY TEST RESULTS

ADDITIVE TYPE	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX		TEST EVALUATION
FedJel	478	32	446	mix water	Poor
Barakade 90	330	21	309	impacted water	
Wyo-Ben	810	57	753	mix water	Good
SW101	913	99	814	impacted water	
Floridin	294	86	208	mix water	Good
Attapulgate	310	87	223	impacted water	

SLURRY MIX and SLURRY COMPATABILITY TEST SUMMARY

Slurry Mix No.	Ratio of additive to water by wgt (%)	Constituents		Marsh Funnel Viscosity initial after hyd. (sec)	Mud Balance Density initial after hyd. (pcf)	pH	Filter Press		Filtrate Loss Response with Imp. GW with DNAPL	Sedimentation Response with Imp. GW	Dessication Response with Imp. GW	Remarks
		Mix Water (type)	Bentonite (type)				flow at 30 min (ml)	Filter Cake w/ Mix W (in)				
1	5.75	Site Mix	FedJel Barakade 90	* 42	* 64.5	10.0	17.6	1/8"	Marginal Good	Good No flocculation	No clumps No cracks	*diluted from 6% mix
2	2.64	Site Mix	Wyo-Ben SW101	37 38	63.4 63.5	10.0	14.6	1/32"	OK Good	Bad Strong flocculation	Clumped No cracks	
3	6.00	Site Mix	Floridin Attapulgate	36 38	64.4 64.5	10.1	111.4	1/4"	Good Questionable	OK Some flocculation	No clumps No cracks	

Filter Press Slurry Compatability Test
Slurry Mix 1: 5.75 % Barakade 90



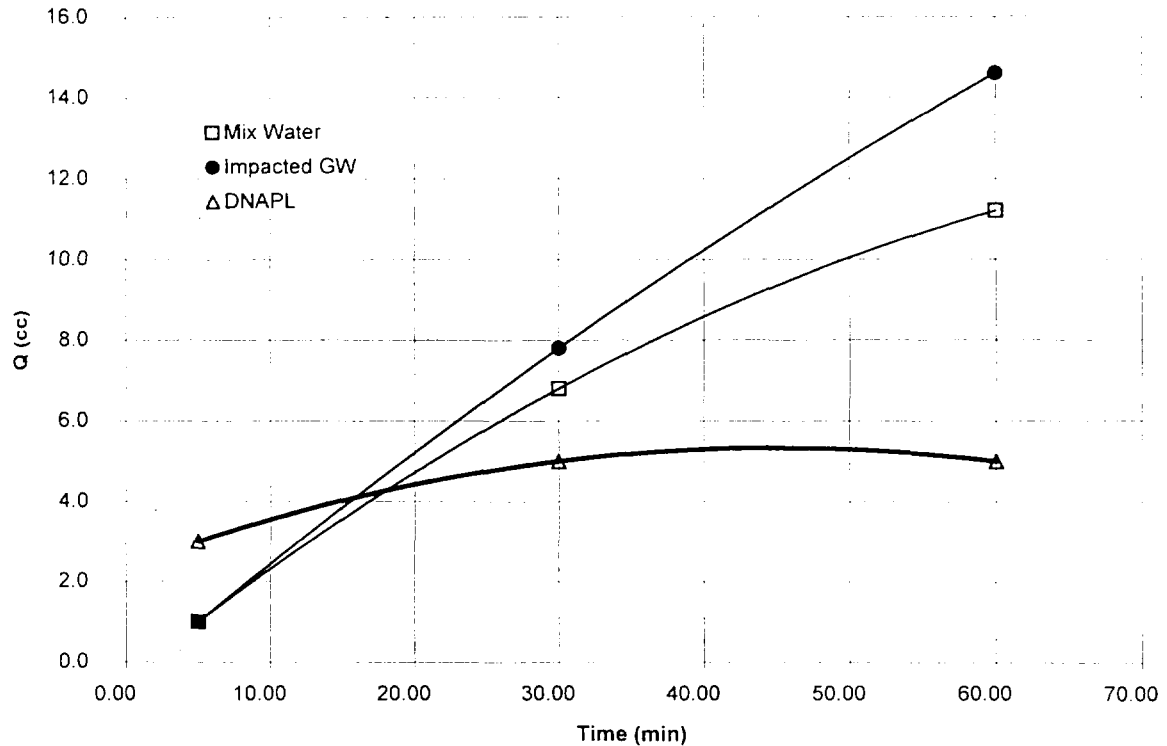
	mix water		Impacted GW		DNAPL	
	Elapsed Time (min)	ΔQ (cc)	Elapsed Time (min)	ΔQ (cc)	Elapsed Time (min)	ΔQ (cc)
	2	1.1	2	1.1	2	1.2
	8	3.0	8	3.2	8	3.0
	14	4.2	14	4.6	14	4.1
	21	5.8	21	6.4	21	6.0
	30	7.6	30	8.9	30	7.1
	43	10.5	43	13.7	43	8.9
	60	13.4	60	19.3	60	9.7
Cake Characteristics						
Thickness (inch):		1/8"		13/64"		3/64"
Water Content (%):		508		673		161
Description:		Intact		loose		Intact

Remarks: No Visible DNAPL leachate

Reviewed By: 12/21/99

Project No. 8E06011	DETREX SITE Design Tests	Effect of Permeant on Flow Rates with Barakade 90 Slurry
URS GREINER WOODWARD CLYDE		

**Filter Press Slurry Compatability Test
Slurry Mix 2: 2.64% SW101**



mix water		Impacted GW		DNAPL	
Elapsed Time (min)	ΔQ (cc)	Elapsed Time (min)	ΔQ (cc)	Elapsed Time (min)	ΔQ (cc)
5.00	1.0	5.00	1.0	5.00	3.0
30.00	6.8	30.00	7.8	30.00	5.0
60.00	11.2	60.00	14.6	60.00	5.0

Cake Characteristics

Thickness (inch):	1/32"	1/16"	1/64"
Water Content (%):	419	842	167
Description:	Intact	loose	Intact

Remarks: Visible DNAPL leachate after 1 minute, no flow for DNAPL after 5 minutes

Reviewed By: 12/21/99

Project No. 8E06011	DETREX SITE Design Tests	Effect of Permeant on Flow Rates with SW101 Slurry
URS GREINER WOODWARD CLYDE		